भारतीय मानक
Indian Standard

IS 18187 : 2023

रबड़, कच्चा प्राकृतिक और सिंथेटिक — भंडारण पर सामान्य मार्गदर्शन

Rubber, Raw Natural and Raw Synthetic — General Guidance on Storage

ICS 83.040.10

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March 2023 **Price Group 3**

Rubber and Rubber Products Sectional Committee, PCD 13

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Rubber and Rubber Products Sectional Committee had been approved by the Petroleum, Coal and Related Products Division Council.

All types of raw rubber change to a certain extent in their physical and/or chemical properties, if not stored properly. Ultimately, they may become unserviceable, for example because of hardening, softening, surface degradation or discolouration, resulting in a different behaviour during processing and/or differences in properties of the vulcanizates.

These changes may be the result of one particular factor or a combination of factors, mainly the action of oxygen, light, heat and humidity. The deleterious effects of these factors may, however, be minimized by an appropriate choice of storage conditions. This standard, therefore, indicates the most suitable conditions for storage.

While formulating this standard, considerable assistance has been derived from ISO 7664 : 2000 Rubber, raw natural and raw synthetic — General guidance on storage.

The composition of the committee responsible for formulation of this standard is listed in Annex A.

Indian Standard

RUBBER, RAW NATURAL AND RAW SYNTHETIC — GENERAL GUIDANCE ON STORAGE

1 SCOPE

This standard provides information on the most suitable conditions for the storage of raw natural and raw synthetic rubber procured in the form of bales.

For rubber procured in the form of powder, loose crumb or pellets, extra care should be taken because of the far greater exposed surface area. In addition, “particulate” rubber can agglomerate under the influence of elevated temperature and/or pressure.

2 STORAGE ACCOMODATION

Raw natural and raw synthetic rubber should be stored under covered area. The storage space should be clean, dry, well ventilated and kept at a moderate temperature.

NOTE — For cold flow polymers, follow separate storage guidelines as recommended by manufacturer/supplier.

2.1 Temperature

The storage temperature should preferably lie between 10 °C and 40 °C. However, it is recognized that in many parts of the world lower or higher ambient temperatures cannot be avoided. Whereas exposure to too high temperature may cause irreversible changes in properties, the effects of low temperature may in some cases induce crystallization, which is reversible and therefore not permanently deleterious. Crystallized or even partially crystallized rubbers are hard and may present difficulties during the mixing process. Such crystallization should be reversed by raising the temperature for a sufficient period of time prior to processing.

NOTE — The maximum rate of crystallization of natural rubber occurs at a temperature of – 27 °C, and the rate is rapid between 0 °C and 10 °C. A minimum storage temperature of 20 °C is recommended to limit the extent of crystallization. Other rubbers which are susceptible to crystallization are isoprene rubber (IR), and chloroprene rubber (CR).

2.2 Heating

Sources of heat in storage rooms should be so arranged and screened that the temperature in the immediate vicinity of the stored rubber does not exceed 25 °C.

2.3 Humidity

Moist conditions should be avoided; storage conditions should be such that condensation of moisture on the rubber or the wrapping does not occur. Moisture can influence the processing and even the cure behaviour of the rubber. Moreover, excessive humidity may cause hydrolysis of certain kinds of rubber.

2.4 Light

Raw rubbers should be protected from light and in particular from direct sunlight and strong artificial light with a high ultraviolet content.

Unless the rubber is packed in opaque wrapping, it is advisable to cover any windows of storage rooms with a red or orange coating or screen. Otherwise, crates or pallets should be covered. The use of normal incandescent lamps is preferable.

3 CONTAMINATION

Raw rubber should be protected from dust and all other kinds of foreign material, with the exception of the packaging material (including sheet rubber used by producers for wrapping the bales or packaging some grades of natural rubber). All direct contact with other kinds of rubber should be avoided.

It is recommended that the rubber be kept in the packaging, as delivered, until required for use. When partly used packages or cases are stored, care should be taken to cover the remaining bales.

4 ROTATION OF STOCKS

Raw rubbers should remain in storage for as short a time as possible. Therefore, the rubber should be issued from stores in “first in, first out” rotation so that the rubber remaining in store is that of the latest delivery.

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

Rubber and Rubber Products Sectional Committee, PCD 13

Organization	*Representative(s)*
Rubber Research Institute of India, Rubber Board, Kottayam	Dr Siby Varghese **(*Chairperson*)**
All India Rubber Industries Association, Mumbai	Shri Srikanth Krishnamurthy Shri Chinmoy Ray (*Alternate*)
Apcotex Industries Limited	Dr S. V. Govindraju
Association of Latex Producers of India, Kerala	Shri Satish Abraham
Association of Planters of Kerala, Thiruvananthapuram	Shri Santosh Kumar Shri Philip C. Jacob (*Alternate*)
Automotive Tyres Manufacturers Association (ATMA), New Delhi	Shri Rajiv Budhraja Shri Niteesh K. Shukla (*Alternate*)
Block Rubber Processors Association of India, Mumbai	Shri Rajiv Tharian Shri Ronny Joseph (*Alternate*)
Directorate General of Quality Assurance (DGQA), Ministry of Defence, New Delhi	Shri S. K. Saxena Shri V. K. Chhabra (*Alternate*)
Dow Corning India Pvt Ltd, Mumbai	Shri Subhranshu Gupta
Flame Retardants Association of India, Gurgaon	Shri P. V. Murali Mohan
GRP Limited, Mumbai	Shri Kalyan Das Shri K. M. Ravi (*Alternate*)
HASETRI	Dr Saikat Das Gupta
Indian Oil Corporation R and D Centre – Faridabad – Haryana	Dr Deepak Saxena Dr Pankaj Bhatnagar (*Alternate*)
Indian Rubber Manufacturers Research Association (IMRA), Mumbai	Dr K Rajkumar Dr Bharat Kapgate (*Alternate*)
Indian Synthetic Rubber Private Limited (ISRPL) Noida	Shri Lalit Kumar Sharma Shri Bhanu Pratap Singh (*Alternate*) Shri Tuhin Kanti Das (*Young Professional*)
KA Prevulacanized, Tamilnadu	Shri Praveen Mathew
LPG Equipment Research Centre, Bangalore	Shri Santosh K. Gupta Shri Ashis Kumar Bera (*Alternate*)
LANXESS India Private Limited, Kolkata	Shri Arindam Ghosh
MRF Limited, Chennai	Shri G. Shyju Dr P Indumathi (*Alternate*)
Newage Fire Protection Industries Pvt Ltd	Shri Bharat J. Shah Shri Jayant Sinha (*Alternate*)
Rado Industries Limited, Faridabad	Shri Kailash Gupta
Reliance Industries Ltd, Vadodara	Dr Abhijit Adhikary Shri Shambhu Lal Agarwal (*Alternate*)

Organization	*Representative(s)*
Research, Designs & Standards Organization (RDSO), Lucknow	Shri P. K. Bala Shri Manoj Minz (*Alternate*)
Shri Sati Rubber Industries, Jaipur	Shri Vijay Kumar Agarwal Shri Sudhir Agarwal (*Alternate*)
Voluntary Organization in Interest of Consumer Education (VOICE), New Delhi	Shri M. A. U. Khan Shri H. Wadhwa (*Alternate*)
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BIS Directorate General	Shrimati Meenal Passi, Scientist 'F'/Senior Director and Head (Petroleum, Coal and Related Products) [Representing Director General (*Ex-officio*)]

Member Secretary
Shri Vijay Kumar Gupta
Scientist 'D'/Joint Director
(Petroleum, Coal and Related Products), BIS

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